

Treatment

Antibiotics and drainage through an incision beneath the jaw which is deepened to permit displacement of the submandibular salivary gland and division of the mylohyoid muscle to allow for adequate drainage.

Cervical lymphadenopathy

Half of the lymph nodes of the body are present in the neck. The main cervical lymph node groups are shown on Fig. 24.11. These nodes drain the head and neck. In addition, the supraclavicular nodes are secondary stations for the breast, apex of lung, upper limbs, as well as abdominal viscera and testes.

Accordingly cervical lymphadenopathy is very common. The causes of lymph node enlargement (lymphadenopathy) are discussed in chapter 15.

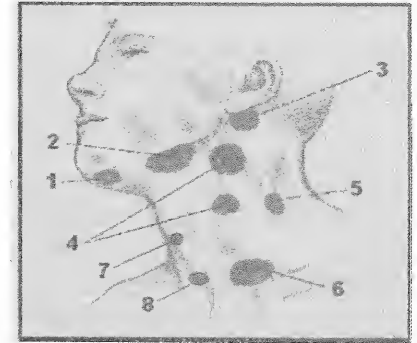


Fig. 24.11. Cervical lymph nodes

1. Submental.
2. Submandibular.
3. Jugulo-digastric (part of upper deep cervical).
4. Upper and mid deep cervical.
5. Posterior triangle.
6. Supraclavicular (part of lower deep cervical). They drain
 - Other post triangle nodes
 - Thyroid
 - Pharynx
 - Larynx
 - Upper oesophagus
 - Breast
 - Upper limb
 - May be involved in drainage of apical lung cancer (Pancoast tumour)
 - On left side may be involved in drainage of malignancies below the diaphragm, e.g., gastric, pancreatic and testicular cancer.
7. Prelaryngeal.
8. Pretracheal.

Differential diagnosis of neck swellings

The diagnosis of a mass in the neck depends upon:

- Age of the patient.
- Clinical course.
- Solid or cystic swelling.
- Site.

The most common neck swellings are

1. Enlarged lymph nodes. These are recognized by being at their known anatomical sites, and by their multiplicity.
2. Thyroid swellings. These are recognized by being in the anatomical site of thyroid gland (muscular triangle), and by their movement with deglutition.

Mid-line swellings

Solid swellings

1. Submental lymph node enlargement.
2. Nodule in the isthmus of the thyroid gland.

Cystic swellings

1. Dermoid cyst.
2. Thyroglossal cyst.(see thyroid gland).
3. Subhyoid bursitis. This is a rare tender, oval swelling, which lies transversely below the hyoid bone. It moves up and down with deglutition and with protrusion of the tongue.
4. Laryngocoele. This swelling occurs in musicians playing with air-blown instruments. It is actually a herniation of laryngeal mucosa through the thyrohyoid membrane. The swelling is resonant, compressible and increases in size with coughing or blowing.
5. Cysts in the thyroid gland
6. Cold abscess, which is rare in the mid-line.

Swellings in the submandibular triangle

1. Enlarged submandibular lymph nodes.
2. Enlarged submandibular salivary gland.

They could be differentiated from each other as the lymph nodes are multiple, could be rolled over the edge of the mandible and, unlike submandibular salivary gland swellings, can not be felt in the floor of the mouth.

Swellings in the carotid triangle

Solid swellings

1. Enlarged upper deep cervical lymph nodes.
2. The upper part of an enlarged lateral lobe of the thyroid gland.
3. Carotid body tumour. This is a rare slowly growing malignant tumour arising from the chemoreceptors present at the bifurcation of the carotid artery. It usually presents at middle age as a slowly growing swelling which is usually smooth but may be lobular. The swelling moves from side to side but not vertically. It exhibits transmitted pulsations from the underlying carotid artery. Angiography can prove the diagnosis. Treatment of this tumour is excision with preservation of the internal carotid artery or if its preservation is not possible the artery should be replaced by a graft even before excision to avoid interrupting the blood flow to the brain.

Cystic swellings

1. Cold abscess.
2. Branchial cyst.

Swellings in the posterior triangle

Solid swellings

1. Enlarged lymph nodes.
2. Neurofibroma arising from the brachial plexus.
3. Cervical rib.

Cystic swellings

1. Cystic hygroma.
2. Pharyngeal pouch (chapter 25).
3. Cold abscess.
4. Pneumatocoele. This is a cystic swelling in the suprascavicular region, which is resonant and compressible. It is due to herniation of the pleura into the base of the neck.

Other swellings that may arise anywhere

In addition, swellings of the skin and subcutaneous tissue are common in the neck region and should be put in mind. They are added to any of the previous lists.

1. Lipomas.
2. Sebaceous cysts.
3. Haemangiomas.

Thoracic outlet syndrome

The brachial plexus and the subclavian artery pass to the upper limb through a narrow triangle in the base of the neck (Fig. 24.12). This triangle is made of the scalenus anterior muscle anteriorly, the scalenus medius muscle posteriorly and the first rib inferiorly. At this narrow space compression of the nerves and the artery may occur causing symptoms and the development of the thoracic outlet syndrome.

FACE, LIPS AND PALATE

Development of the face, lips and palate

Development of the face (Fig. 20.1)

The human face is formed by fusion of five embryonic prominences. Each process is formed of a core of mesenchymal tissue lined by epithelium of endodermal origin and covered by surface ectoderm. They encircle the stomodaeum (primitive mouth).

- One frontonasal process. The frontonasal process (made of proliferation of neural crest from the forebrain) is indented by two olfactory pits dividing it into a median and two lateral processes.
- Two maxillary processes.
- Two mandibular processes. These will form the floor of the mouth, lower jaw, lower lip and the two superior portions which give rise to the maxillary process.

External ear

The external auditory canal is formed from the first branchial groove while the auricle is derived mainly from the second branchial arch from six tubercles.

Development of the lips (Fig. 20.1)

Upper lip

- The lateral parts are formed of the maxillary process below the nostrils.
- The middle part of upper lip (philtrum) is formed of the median part of frontonasal process.

Lower lip

The lower lip is formed by fusion of the two mandibular processes.

Development of the palate

- **Primary palate.** This is the anterior part of the palate and is also called the premaxilla. It is the part that carries the four incisor teeth. The premaxilla is derived from the median part of the frontonasal process (the same part that forms the philtrum of upper lip).
- **Secondary palate.** From each maxillary process a palatal process grows medial across the dorsum of the tongue. The two palatal processes unite with each other and with the premaxilla from before backwards together with the nasal septum thus separating the nasal cavities from each other and from the oral cavity.

CHAPTER CONTENT

- Development of the face, lips and palate
- Congenital anomalies
- Maxillo facial injuries
- Infections of the face
- Lip cancer

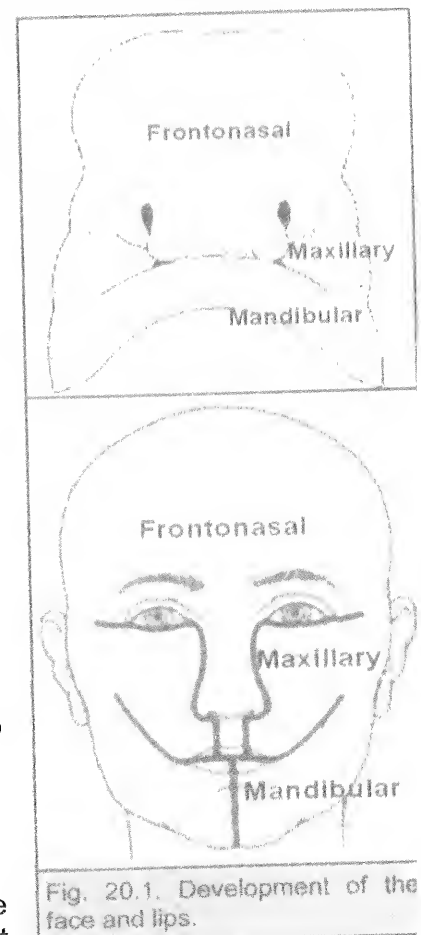


Fig. 20.1. Development of the face and lips.

Congenital anomalies

The common anomalies are

1. Cleft lip.
2. Cleft palate.
3. Preauricular sinus. This is due to imperfect fusion of the auricular tubercles. When occluded a cyst is prone to develop and might develop into an abscess, if it bursts a resistant ulcer will result.
4. Dermoid cysts. Sequestration dermoid cysts occur at the lines of embryonic fusion. The most frequent of which is the external angular dermoid (chapter 12).
5. Pierre Robin syndrome consists of cleft palate associated with receding mandible (micrognathia) and posterior displacement of the tongue obstructing the oropharyngeal airway.
6. Mandibular prognathism which means protrusion of the mandible.

Clefts of the lip and palate are the most frequent congenital anomalies of the head (1700 live births). The incidence is less in black and oriental races. Therefore, they will be discussed in details.

Cleft lip (hare lip)

Aetiology

The possible aetiological factors include

1. Familial disease due to genetic susceptibility.
2. Consanguinity.
3. Prenatal exposure to alcohol, anticonvulsants, x-ray or virus infection as German measles in the first 3 months of pregnancy.

Pathology

- Cleft lip is caused by failure of fusion between the median part of the frontonasal process and one (unilateral) or both (bilateral) lateral maxillary processes in the developing face.
- The condition may be unilateral (Fig. 20.2) (most common on to the left side) or bilateral (Fig. 20.3).
- The cleft can be complete (reaching the nostril floor) or incomplete. With complete lip clefts the orbicularis oris muscle is completely interrupted. This leads to flaring and flatness of the nares on the affected side (Fig. 20.4).
- There is lack of continuity of the skin, mucous membrane and orbicularis oris across the cleft.
- The cleft lip may be simple or complicated if it is associated with cleft palate or alveolus.
- There is short lip-nose distance on the affected side.

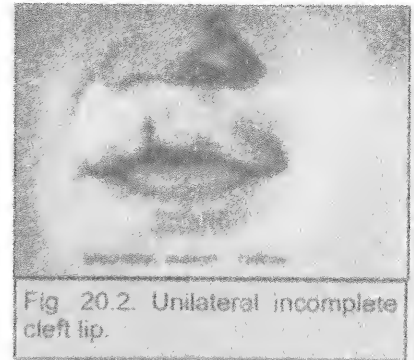


Fig. 20.2. Unilateral incomplete cleft lip.



Fig. 20.3. Bilateral cleft lip

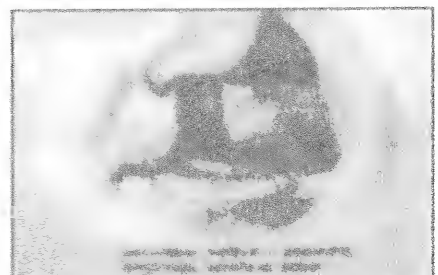


Fig. 20.4. Complete cleft lip and alveolus.

- Cleft lip does not interfere with suckling, but there might be associated abnormal teeth growth.
- Cleft lip may be associated with other congenital anomalies in up to 35% of cases (cleft palate, velopharyngeal incompetence, coloboma, microphthalmia, encephalocele, ear tags or torticollis).

Treatment

- Surgery is the only treatment
- Timing. Operation is best performed at the age of 3-6 months.
- Pre-requisites. The infant should be at least 10 pounds in weight and the haemoglobin level should be at least 10 gm%.
- Aim of surgery. The aim of surgery is to improve appearance. There is no functional loss.
- Principles of the operation (Fig. 20.5)
 - Paring of the edges.
 - Repairing the defect by suturing the three layers of the lip (skin, muscle and mucous membrane) taking care to adjust the vermillion and mucous borders. The sutures are not made in a straight line but in a zigzag way to avoid notching of the lip margin as the scar contracts.

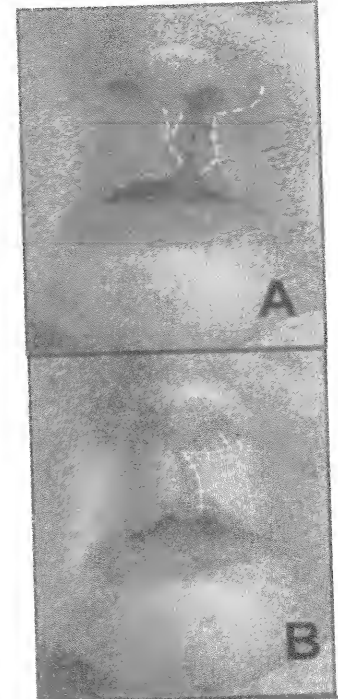


Fig. 20.5. Repair of cleft lip.

Cleft palate

Isolated cleft palate forms one third of all facial clefts.

Aetiology

Predisposing factors are as mentioned for cleft lip.

Pathology

Cleft palate is caused by arrest of fusion between the two palatal processes, and possibly with the premaxilla.

Types (Fig. 20.6)

1. Cleft uvula.
2. Cleft soft palate.
3. Cleft soft and hard palate (complete).
4. Complete cleft palate plus one side of premaxilla (bipartite).
5. Complete cleft palate plus both sides of premaxilla (tripartite, Fig. 20.7).

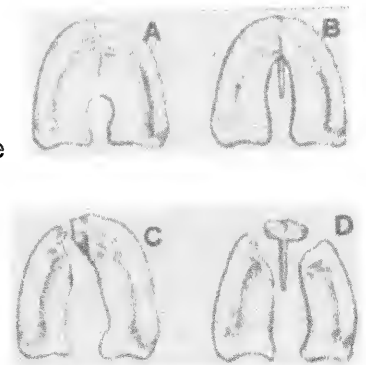


Fig. 20.6. Types of cleft palate

- A. Cleft soft palate
- B. Cleft soft and hard palate
- C. Complete cleft palate plus one side of premaxilla (bipartite)
- D. Complete cleft both sides of (tripartite)

Effects on function

- (a) Impairment of normal suckling, due to inability to create a negative intra-oral pressure because of the oro-nasal communication
- (b) Food will reflux into the nose and may be aspirated leading to aspiration pneumonia

- (c) Inadequate emptying of the middle ear due to abnormal levator palati insertion, preventing adequate aeration of the Eustachian tube thus predisposing to recurrent otitis media. This may lead to hearing loss.
- (d) Speech defects secondary to.
 - a. Inadequate velopharyngeal mechanism. Opposition of velum (the muscles of the soft palate) against the pharyngeal wall to separate the oral from the nasal cavity) is impaired. Nasal tone due to naso-oral communication.
 - b. Hearing loss
- (e) Distortion of facial growth.
- (f) Interference with normal teeth alignment.

Treatment

- Timing of operation 12-18 months.
- Preoperative management
 - Attention to feeding. As there is inefficient breast feeding, a bottle with a large hole is used or spoon feeding is practiced in an upright position.
 - Prevention and treatment of chest infection.
- Objectives of surgery
 - Closure of oro-nasal communication
 - Achieving a competent velopharyngeal sphincter.
- Principles of surgery (Fig. 20.8)
 - Paring of edges.
 - Suturing is done in 3 layers in the middle line (nasal mucosa, muscle layer then oral mucosa).
 - Lateral relaxation incisions are needed.
 - Fracture of the pterygoid hamulus to relax the tensor palati.
- Post operative treatment
 - Speech therapy.
 - Orthodontic treatment.

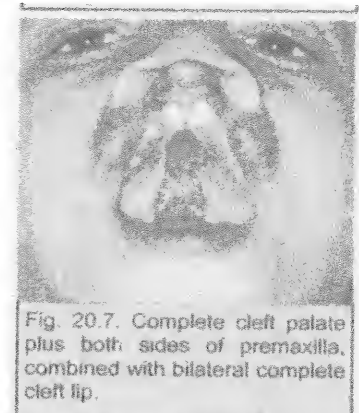


Fig. 20.7. Complete cleft palate plus both sides of premaxilla, combined with bilateral complete cleft lip.

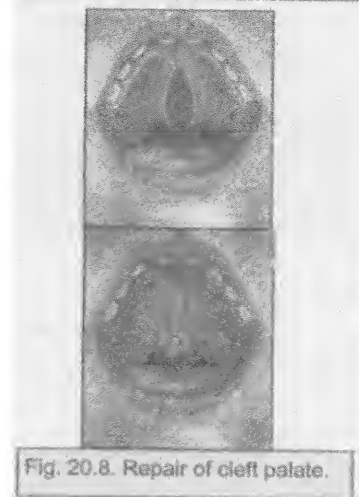


Fig. 20.8. Repair of cleft palate.

Maxillofacial injuries

Maxillofacial injuries are frequent with road traffic accidents, fights, and contact sports as soccer.

In treatment of patients with extensive maxillofacial injuries, the order of priorities is consistent

1. Patent airway. The patient may have compromise of his respiration due to blood, dentures or vomitus obstructing the upper airway. The usual measures to keep a patent airway are followed (chapter 2). Tracheostomy is rarely indicated.
2. Effective breathing.
3. Control of haemorrhage by direct pressure or ligation of the bleeding vessels. If the patient is shocked, suspect associated abdominal or chest injuries. Remember that isolated facial injuries rarely cause shock.

Soft tissue injuries

Skin wounds

These should be treated in theatre under sterile conditions:

- Clean and irrigate the wound.
- Remove foreign bodies.
- Minimal wound debridement.
- Cut wounds and lacerations are sutured.
- Avulsed flaps are sutured back after ensuring vascularity at the tip.
- Local flaps or skin grafts are needed if there are skin defects.

Facial nerve injuries

These can be diagnosed on physical examination.

- If the injury is medial to the midpupillary line, it requires no treatment.
- Lateral injury requires nerve repair under magnification (chapter 18).

Parotid injury

- Injury of the duct requires end to end anastomosis over a small silastic catheter. If the injury is at the distal part of the duct, the proximal cut end is sutured to the oral mucosa.
- Injury to the gland. The skin is sutured and a small drain, is inserted. There will be minor salivary leakage which usually stops in 3 weeks.

Eyelid injuries

Careful suturing of all layers of the lid. Repair of cut levator should be done, otherwise ptosis will result. The tarsus should be repaired. Injury to the lacrimal apparatus must be recognized and repaired to avoid epiphora and dacryocystitis.

Ear injuries

Full thickness tears are sutured by cutaneous perichondrial sutures. Haematomas should be evacuated otherwise cauliflower ear will result.

Nasal injuries

Nostril tears should be sutured carefully in two layers. Septal haematoma should be evacuated to avoid septal cartilage resorption which will end in a saddle nose deformity.

Lips

These should be sutured in 3 layers with respect to the anatomical landmarks.

Intra oral injuries

The edges are debrided and loosely approximated.

Animal bites

These are usually heavily contaminated. Treatment consists of prompt excision, antibiotics and rabies vaccination. The wound is left open.

Fractures of facial bones

These fractures may be closed or open.

Mandibular fractures

Aetiology

Falls, kicks, fist blows, car accidents or pathological.

Site

- Fractures may occur in the symphysis, body, angle, ramus, condyles, coronoid process, alveolar process.

- Fractures of the body are the commonest and usually occur close to the mental foramen, where the bone is weakened by the marked curvature and by the deep canine socket. In bilateral cases, the digastric and geniohyoid muscles pull the chin fragment and the attached tongue backwards, impairing the airway. Fractures of the angle are minimally displaced as they are splinted by the masseter and the pterygoid muscles.

Clinical features

Symptoms

- Pain, especially on attempts to open the mouth.
- Blood-stained saliva. Fractures of the mandible are usually compound into the mouth because the mucoperiosteum is firmly attached to the bone.
- Impairment of speech and swallowing.
- Sometimes there is anaesthesia of the lower lip.

Signs

- Swelling and haematoma in the floor of mouth (Coleman's sign).
- Local tenderness.
- Crepitus
- Irregularity of the line of teeth (Fig. 20.9).

Investigations

Plain X-ray is diagnostic. A panoramic view shows the whole mandible (Fig. 20.10).

CT may be needed.

Treatment

1. First-aid treatment. The jaw is supported with 4-tailed bandage and analgesics are prescribed for pain. Antibiotics and mouth hygiene are important to prevent infection.
2. Reduction and fixation. If there is displacement, reduction is done under anaesthesia. Fixation (for 3-6 weeks) is done by
 - a. Arch bars or inter-dental wiring. In the latter the patient's jaws are wired together (Fig. 20.11) and a liquid diet is given. This technique is appropriate for a majority of lower jaw fractures.
 - b. Plate and screws. More complicated fractures require open reduction through an incision and internal fixation of bone ends by plates and screws (Fig. 20.11).

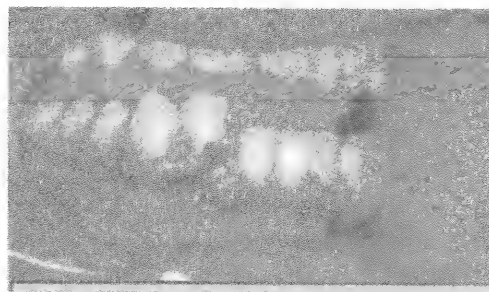


Fig. 20.9. Irregularity of the line of teeth in a case of mandible fracture

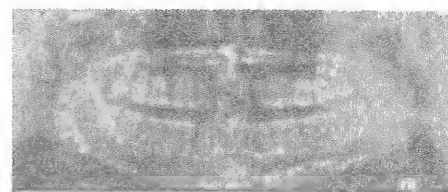


Fig. 20.10. A panoramic view shows the whole mandible. In this case the fracture is situated near the mental foramen and has been fixed by plates and screws.

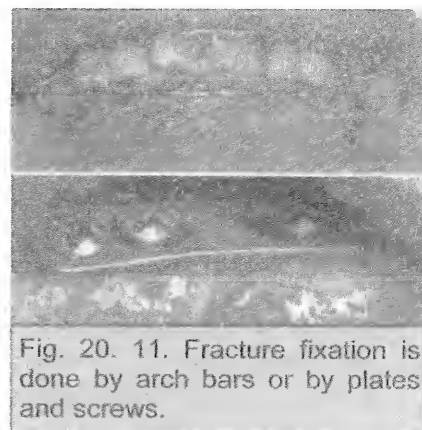


Fig. 20.11. Fracture fixation is done by arch bars or by plates and screws.

Fractures of the Maxilla

Aetiology

This usually occurs secondary to car accidents.

Clinical features

There is pain, excess salivation, mal-occlusion, epistaxis, diplopia, swelling, and crepitation. The deformity can be visualized by X-ray or CT scan (Fig. 20.12).

Classification

Le Fort classified maxillary fractures into three varieties (Fig. 20.13)

- **Le Fort I.** This is a transverse fracture above the level of the teeth. It is treated by intermaxillary fixation which in turn is fixed to the inferior orbital margin by wires.
- **Le Fort II.** This is a pyramidal fracture, traversing the base of the nose through the posterior wall of maxillary antrum and across the orbit. It is treated by intermaxillary fixation fixed by wires to the zygomatic process of frontal bone.
- **Le Fort III.** There is craniofacial disjunction, i.e., separation of the facial bones from their cranial attachment. Treatment includes correction of nasal and zygomatic fractures and treatment of fracture of the maxilla as in Le Fort II.

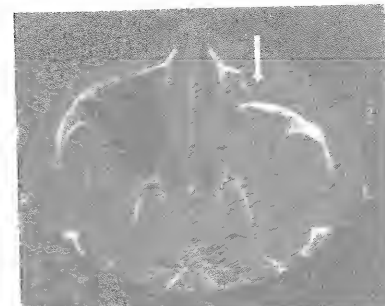


Fig. 20.12: CT scan showing a depressed fracture of anterior wall of left maxillary antrum.

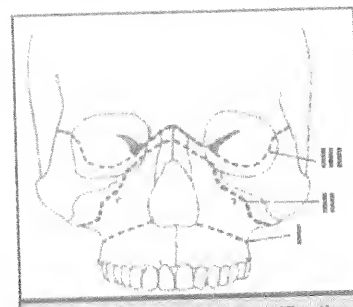


Fig. 20.13: Le Fort classification of maxillary fractures.

Fractures of the nose

Clinical features. There is pain, swelling, epistaxis, crepitus. Plain X-ray is diagnostic.

Treatment is by digital or instrumental manipulation to reduce the fracture. The position is then fixed by intranasal packing for 3 days with an external splint for 7 days. Neglected old fractures require osteotomies.

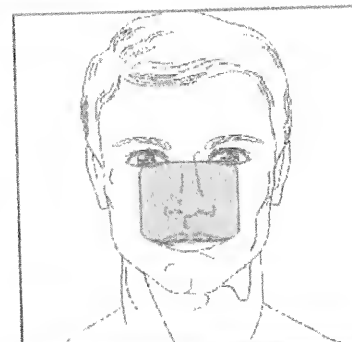


Fig. 20.14: Dangerous area of the face.

Fractures of the zygoma

Clinical features include pain, swelling in eyelids, flat cheek, numbness in the cheek and upper teeth due to injury of the infraorbital nerve, and crepitus with irregular infraorbital margin.

Blowout fractures

These are depressed fractures of the orbital floor with herniation of some of the orbital contents into the maxillary sinus due to sudden increase in the intraorbital pressure. blow by a fist is a common cause.

Clinical features. The patient complains of diplopia and limited up and down gaze with or without enophthalmos.

Temporomandibular dislocation

Aetiology

- Direct blows.
- Yawning.
- Wide opening of the mouth under anaesthesia. It is commonly bilateral and affect middle aged females.

Clinical features

There is pain and dysarthria. The mouth is held open with fixed jaws. In unilateral cases, the chin is deviated to the opposite side.

Treatment

- Reduction (better under anaesthesia) by downward traction on the molars with the padded thumb, together with upward rotation of the body with the outside fingers.
- In recurrent cases excision of the meniscus is done.

Infections of the face

Boils or carbuncles can develop in the face. The area of the face between the lines passing from the outer canthus to the angle of the mouth is called the “dangerous **area**” because infection in this area is liable to cause cavernous sinus thrombosis (Fig. 20.14).

Routes of spread to cavernous sinus

1. The angular vein communicates with the ophthalmic veins which drain into the cavernous sinus.
2. The anterior facial vein communicates with the pterygoid venous plexus in the infratemporal fossa through the deep facial vein. The pterygoid venous plexus is connected to the cavernous sinus by an emissary vein that passes through the foramen ovale at the skull base.

Lip cancer

Epithelioma (squamous cell carcinoma) is the commonest lip malignancy (see chapter 12).

Aetiology

1. Prolonged exposure to the ultraviolet rays of the sun.
2. Continuous irritation and hyperplasia due to cigarette smoking or the use of hot tobacco pipes.

Pathology

Histological picture

Squamous cell carcinoma, which is usually well-differentiated.

Gross picture

The lower lip is more affected than the upper. The lesion usually starts as a nodule or erosion which resists treatment. Later the typical ulcer (Fig. 20.15) becomes evident.

- Raised everted edges.
- Indurated base and margin (induration extends beyond the edge).
- Possibly spread to cervical lymph nodes (Fig. 20.16).
 - The central part of lower lip drains to submental nodes. The lateral parts drain to submandibular nodes.
 - Later upper deep cervical nodes are involved.

Treatment

Treatment follows the principles outlined in chapter 12.

Primary tumour

Surgery. Excision should include the lesion with a safety margin.

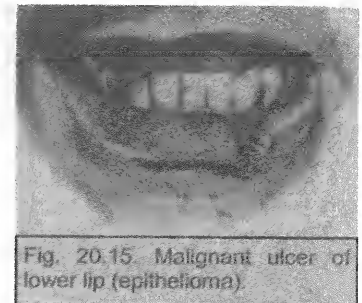


Fig. 20.15. Malignant ulcer of lower lip (epithelioma).

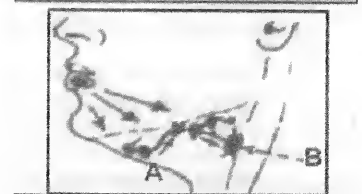


Fig. 20.16. Lymphatic spread of lower lip cancer. A. Submandibular nodes B. Upper

- For lesions involving up to one third of the lip surgical treatment can be accomplished by "V" shaped excision and primary suture in 3 layers; mucosa, muscle, and skin.
- For bigger lesions plastic reconstruction will be needed.

Radiotherapy is a good alternative because squamous cell carcinoma is radio-sensitive.

Lymph nodes

If there are lymph node metastases, a suprahyoid or a complete block dissection

Prognosis

Epithelioma of the lip has a better prognosis than that of the cheek, tongue or floor of mouth.